L4 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:819209 CAPLUS
DN 133:351330
ED Entered STN: 22 Nov 2000
TI Microporous insulating materials with excellent heat resistance and laminates therefrom
IN Yao, Shigeru; Oya, Nobuo
PA Ube Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08J009-28
ICS B32B005-18; H01B003-30; H01B005-14; H01B017-56; H01B017-64
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000319442	A2	20001121	JP 1999-132755	19990513 <--
	US 2003129379	A1	20030710	US 2000-539929	20000331
	US 2004166297	A1	20040826	US 2004-785413	20040225
	US 2004241419	A1	20041202	US 2004-784982	20040225
PRAI	JP 1999-116178	A	19990423		
	JP 1999-132755	A	19990513		
	JP 1999-337445	A	19991129		
	US 2000-539929	B1	20000331		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000319442	ICM	C08J009-28
	ICS	B32B005-18; H01B003-30; H01B005-14; H01B017-56; H01B017-64
US 2003129379	NCL	428/308.400; 428/315.700
	ECLA	B32B027/06; C08J005/18+L79/08; H05K001/03C2E
US 2004166297	NCL	428/209.000; 428/901.000
	ECLA	B32B027/06; C08J005/18+L79/08; H05K001/03C2E
US 2004241419	NCL	428/319.100; 428/315.700; 428/315.500; 428/317.100
	ECLA	B32B027/06; C08J005/18+L79/08; H05K001/03C2E

AB The materials, useful for circuit boards, comprise heat-resistant polymer films with continuous micropore structures with porosity 15-80%. Thus, a microporous polyimide film manufactured from 3,3',4,4'-biphenyltetracarboxylic dianhydride and 4,4'-diaminodiphenyl ether showed thickness 40 μm, average pore size 0.5 μm, and porosity 60%.
ST insulator microporous polyimide film circuit board; heat resistance polyimide adhesive copper laminate
IT Electric insulators
Printed circuit boards
(elec. insulating microporous films with good heat resistance for printed circuit boards)
IT Polyimides, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(elec. insulating microporous films with good heat resistance for printed circuit boards)
IT Laminated plastics, uses
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(elec. insulating microporous films with good heat resistance for printed circuit boards)
IT Polysiloxanes, uses

Polysiloxanes, uses
Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(epoxy-polyimide-, heat-resistant adhesive; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT Polyimides, uses
Polyimides, uses
Polyimides, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(epoxy-siloxane-, heat-resistant adhesive; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT Adhesives
(heat-resistant; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT Plastic films
(microporous; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT Polyimides, uses
Polyimides, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT Polyethers, uses
Polyethers, uses
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT Epoxy resins, uses
Epoxy resins, uses
Epoxy resins, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyimide-siloxane-, heat-resistant adhesive; elec. insulating microporous films with good heat resistance for printed circuit boards)

IT 26298-81-7P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-diaminodiphenyl ether copolymer 26615-45-2P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-diaminodiphenyl ether copolymer, sru 29319-22-0P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-p-phenylenediamine copolymer 32197-39-0P 74049-11-9P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-diaminodiphenyl ether-p-phenylenediamine copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(elec. insulating microporous films with good heat resistance for printed circuit boards)

IT 7440-50-8, Copper, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(foil; elec. insulating microporous films with good heat resistance for printed circuit boards)

RN 26298-81-7P
RN 26615-45-2P
RN 29319-22-0P
RN 32197-39-0P
RN 74049-11-9P
RN 7440-50-8

L4 ANSWER 2 OF 3 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
AN 2001-075354 [09] WPIX
CR 2001-141447 [15]; 2002-002004 [01]
DNN N2001-057253 DNC C2001-022083
TI Porous insulating material useful in high frequency electronic components, comprises high heat-resistant resin film having porous structure with fine

continuous pores and specified porosity.
DC A26 A85 L03 P73 V01 X12 X16
IN ASANO, Y; FUKUNAGA, K; KAWABATA, K; KINOUCHI, M; OHYA, S; YAO, S
PA (UBEI) UBE IND LTD; (ASAN-I) ASANO Y; (FUKU-I) FUKUNAGA K; (KAWA-I) KAWABATA K; (KINO-I) KINOUCHI M; (OHYA-I) OHYA S; (YAOS-I) YAO S
CYC 2
PI JP 2000319442 A 20001121 (200109)* 9 C08J009-28 <--
US 2003129379 A1 20030710 (200347) B32B003-26
US 2004166297 A1 20040826 (200457) B32B003-00
US 2004241419 A1 20041202 (200481) B32B003-26
ADT JP 2000319442 A JP 1999-132755 19990513; US 2003129379 A1 US 2000-539929 20000331; US 2004166297 A1 Cont of US 2000-539929 20000331, US 2004-785413 20040225; US 2004241419 A1 Div ex US 2000-539929 20000331, US 2004-784982 20040225
PRAI JP 1999-132755 19990513; JP 1999-116178 19990423; JP 1999-337445 19991129
IC ICM B32B003-00; B32B003-26; C08J009-28
ICS B32B005-18; H01B003-30; H01B005-14; H01B017-56; H01B017-64
AB JP2000319442 A UPAB: 20041216
NOVELTY - The porous insulating material (1) comprises high heat-resistant resin film (3), such as polyimide film, having porous structure with fine continuous pores (2). The film has a porosity of 15-80%.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the porous insulating material laminate.
USE - As electrical insulating material in high frequency electronic components, such as portable mobile communications e.g. Vehicle telephone, digital portable telephone and satellite communication devices.
ADVANTAGE - The material has excellent electrical property (low dielectric constant) and excellent heat-resistance. The porous insulating material has high adhesive property with metals and metallic foils, as substrates.
DESCRIPTION OF DRAWING(S) - The figure shows cross-sectional view of porous insulating material such as porous polyimide film.
Porous polyimide film 1
Continuous pore 2
High heat-resistant film 3
Dwg.1/7
FS CPI EPI GMPI
FA AB; GI
MC CPI: A12-E01
EPI: X12-D02A1; X12-E02B; X12-E03C

L4 ANSWER 3 OF 3 JAPIO (C) 2005 JPO on STN
AN 2000-319442 JAPIO
TI POROUS INSULATION MATERIAL AND LAMINATE THEREOF
IN YAO SHIGERU; OYA NOBUO
PA UBE IND LTD
PI **JP 2000319442** A 20001121 Heisei
AI JP 1999-132755 (JP11132755 Heisei) 19990513
PRAI JP 1999-132755 19990513
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000
IC ICM C08J009-28
ICS B32B005-18; H01B003-30; H01B005-14; H01B017-56; H01B017-64
AB PROBLEM TO BE SOLVED: To obtain a porous material having heat resistance, a low permittivity, a low dielectric loss, and excellent insulation properties by using a highly heat- resistant resin film having a porous structure having fine continuous pores and a specified porosity.
SOLUTION: The porous insulation material has a permittivity of at most 2.5. The highly heat-resistant resin film has a porosity of 15-80% and is desirably a polyimide film. The porous polyimide film is obtained, for example, by the following method. A casting of a polyimide precursor solution is brought into contact with a coagulation medium through an agent for regulating the rate of solvent displacement to form a porous

deposit of the precursor, and the porous polyimide precursor film is thermally or chemically imidized. A heat- resistant adhesive layer is laid on at least either surface of the film, and a protective film is formed on the adhesive layer to form a laminate. In use, the laminate is stripped of the protective film, and a conductive metallic foil for an electronic circuit is laid on the protective film to easily obtain a circuit board.

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